

WHAT IS CLAIMED IS:

1. An infrared image sensor comprising:

a substrate having an image area on which infrared radiation is made incident, and a non-image area out of
5 the image area;

a plurality of first heat-sensitive parts arranged in columns and rows on the image area of the substrate, each of the plurality of the first heat-sensitive parts having a thermoelectric conversion function of
10 converting a temperature into an electric signal in the state where a bias current is applied thereto, and a structure of absorbing the infrared radiation;

a plurality of second heat-sensitive parts provided in the non-image area of the substrate, the
15 plurality of second heat-sensitive parts provided to correspond to the respective rows and having the same thermoelectric conversion function as that of the first heat-sensitive parts;

a bias current supply circuit which supplies the
20 bias current to the first heat-sensitive parts and the second heat-sensitive parts;

an output circuit which outputs the electric signal of the first heat-sensitive parts; and

a bias current control circuit which controls the
25 bias current to be fed to the first heat-sensitive parts, according to an electric signal of the second heat-sensitive parts.

2. An infrared image sensor according to claim 1,
the first heat-sensitive parts being arranged in m rows
and n columns in the image area, and the second heat-
sensitive parts being arranged in m rows and 1 column
5 in the non-image area.

3. An infrared image sensor according to claim 1,
the non-image area being provided in a position out of
an irradiation area of an optical lens for condensing
the infrared radiation on the image area.

10 4. An infrared image sensor according to claim 1,
further comprising a shielding structure which blocks
the infrared radiation made incident through the
optical lens such that the infrared radiation is not
made incident on the non-image area.

15 5. An infrared image sensor according to claim 1,
the bias current control circuit supplying the same
bias current as fed to the first heat-sensitive parts
to the second heat-sensitive parts, and the bias
current control circuit comprising: a source follower
20 circuit which inverses the electric signal from the
second heat-sensitive parts and outputs an inversed
signal; and a control circuit which controls the bias
current flowing through the first heat-sensitive parts,
with the inversed signal used as a control voltage.

25 6. An infrared image sensor according to claim 1,
the thermoelectric conversion function comprising a
thermoelectric converter.

7. An infrared image sensor according to claim 6,
the thermoelectric converter sensing a rise in
temperature as a decrease in resistance.

8. An infrared image sensor according to claim 6,
5 the thermoelectric converter including a semiconductor
pn junction which senses a rise in temperature as a
non-linear decrease in resistance.

9. An infrared image sensor according to claim 1,
the thermoelectric conversion function comprises a
10 plurality of thermoelectric converters connected in
series.

10. An infrared image sensor according to claim 1,
each of the first heat-sensitive parts and the second
heat-sensitive parts being hung, apart from the
15 substrate, by a low-heat conductor in a hollow-body
part provided in the substrate.

11. An infrared image sensor comprising:

a substrate having an image area on which infrared
radiation is made incident, and an non-image area out
20 of the image area;

a plurality of first heat-sensitive parts arranged
in columns and rows on the image area of the substrate,
each of the plurality of the first heat-sensitive parts
having a thermoelectric conversion function of
25 converting a temperature into an electric signal in the
state where a bias current is applied thereto, and a
structure of absorbing the infrared radiation;

a plurality of second heat-sensitive parts provided in the non-image area of the substrate, the plurality of second heat-sensitive parts provided to correspond to the respective rows and having the same thermoelectric conversion function as that of the first heat-sensitive parts;

a plurality of address lines arranged for the respective rows, and connected to the first heat-sensitive parts and the second heat-sensitive parts in the same respective rows;

a plurality of first signal lines arranged for the respective columns, and connected to the first heat-sensitive parts in the same respective columns;

a second signal line connected to the second heat-sensitive parts;

a bias current supply circuit which successively applies a fixed bias voltage to the address lines, and selectively supplies a fixed bias current to the first heat-sensitive parts and the second heat-sensitive parts;

an output circuit which outputs a voltage generated on the first signal lines in the image area as a result of supplying the bias current; and

a control circuit which controls the bias current supplied to the first heat-sensitive parts in the image area, on the basis of a voltage generated on the second signal line in the non-image area as a result of

supplying the bias current, and suppresses change in a detection signal caused by a rise in temperature of the first heat-sensitive parts due to the bias current.

12. An infrared image sensor according to
5 claim 11, the first heat-sensitive parts being arranged in m rows and n columns in the image area, and the second heat-sensitive parts being arranged in m rows and 1 column in the non-image area.

13. An infrared image sensor according to
10 claim 11, the non-image area being provided in a position out of an irradiation area of an optical lens for condensing the infrared radiation on the image area.

14. An infrared image sensor according to
15 claim 11, further comprising a shielding structure which blocks the infrared radiation made incident through the optical lens such that the infrared radiation is not made incident on the non-image area.

15. An infrared image sensor according to
20 claim 11, the bias current control circuit supplying the same bias current as fed to the first heat-sensitive parts to the second heat-sensitive parts, and the bias current control circuit comprising: a source follower circuit which inverses the electric signal
25 from the second heat-sensitive parts and outputs an inversed signal; and a control circuit which controls the bias current flowing through the first

heat-sensitive parts, with the inversed signal used as a control voltage.

16. An infrared image sensor according to claim 11, the thermoelectric conversion function
5 comprising a thermoelectric converter.

17. An infrared image sensor according to claim 16, the thermoelectric converter sensing a rise in temperature as a decrease in resistance.

18. An infrared image sensor according to
10 claim 16, the thermoelectric converter including a semiconductor pn junction which senses a rise in temperature as non-linear decrease in resistance.

19. An infrared image sensor according to claim 11, the thermoelectric conversion function
15 comprises a plurality of thermoelectric converters connected in series.

20. An infrared image sensor according to claim 11, each of the first heat-sensitive parts and the second heat-sensitive parts being hung, apart from
20 the substrate, by a low-heat conductor in a hollow-body part provided in the substrate.